WHAT IS CLAIMED IS:

1. A paper feeding apparatus comprising:

a paper feed device comprising:

a paper loading board to load paper obliquely,

an abutting surface arranged in the lower part of the paper loading board and to which the bottom end of paper loaded on the paper loading board abuts,

a feed roller abutting the surface of the paper to feed the paper to the predetermined direction sheet by sheet, and

a manual feed tray attached to the paper loading board in an openable/closable manner;

a stopper arranged to be able to move vertically to the abutting surface to lift up the bottom end of the paper when positioned higher than the abutting surface; and

a stopper drive device to lower the stopper below the abutting surface when the manual feed tray is opened to be capable of a paper insertion.

2. The paper feeding apparatus according to Claim 1, wherein the stopper drive device comprises a linking mechanism arranged between the manual feed tray and the stopper to lower the stopper when the manual feed tray is opened for a paper insertion.

3. The paper feeding apparatus according to Claim 2, wherein the stopper drive device further comprises:

a rotational shaft facing to the stopper as the linking mechanism,

a cam fixed on the rotational shaft, and

a projection portion fixed on one axial end of the rotational shaft,

wherein the stopper comprises:

a stopper body to which the bottom end of paper loaded on the paper loading board abuts, and

an abutting unit extended from the stopper body and abutting on the cam to give vertical movement to the stopper body depending on the position of the cam,

wherein the manual feed tray is constituted to push the projection portion when opened for a paper insertion, and

wherein the cam is constituted to move to the position to lower the stopper body when the projection portion is pushed.

4. The paper feeding apparatus according to Claim 3, further comprising:

a change detection device to detect a change in the open/closed state of the manual feed tray; and

a control device to permit the stopper drive device to raise the stopper when the change detection device detects that

the state of the manual feed tray has changed from the open state to the closed state.

5. The paper feeding apparatus according to Claim 1, further comprising:

a change detection device to detect a change in the open/closed state of the manual feed tray; and

a control device to permit the stopper drive device to lower the stopper when detecting that the state of the manual feed tray has changed from the closed state to the open state to permit a paper insertion.

6. The paper feeding apparatus according to Claim 5, wherein the control device permits the stopper drive device to raise the stopper when the change detection device detects that the state of the manual feed tray has changed from the open state to the closed state.

7. The paper feeding apparatus according to Claim 4, wherein the stopper drive device comprises:

a rotational shaft facing to the stopper,

a cam fixed on the rotational shaft,

a first gear arranged on one axial end of the rotational shaft to rotate with the rotational shaft,

a second gear geared with the first gear, and

a rotational force transmission device to transmit rotational force given from a driving source to the second gear,

wherein the stopper comprising:

a stopper body to which the bottom end of paper loaded on the paper loading board, and

an abutting unit extending from the stopper body and abutting on the cam to give vertical movement to the stopper depending on the position of the cam, and

wherein the control device drives the driving source so that the cam moves to the position to lower the stopper body when the manual feed tray is opened to permit a paper insertion, and to the position to raise the stopper body when the manual feed tray is not open.

8. The paper feeding apparatus according to Claim 7, wherein the second gear comprises a rotation limit device not to give rotational force to the first gear in the descendent direction of the stopper after the stopper lowers.

9. An image formation apparatus comprising:

a paper feeding apparatus including:

a paper feed device comprising:

a paper loading board to load paper obliquely,

an abutting surface arranged in the lower part of the paper loading board and to which the bottom end of paper loaded on the paper loading board abuts,

a feed roller abutting the surface of the paper to feed the paper to the predetermined direction sheet by sheet, and

a manual feed tray attached to the paper loading board in an openable/closable manner;

a stopper arranged to be able to move vertically to the abutting surface to lift up the bottom end of the paper when positioned higher than the abutting surface; and

a stopper drive device to lower the stopper below the abutting surface when the manual feed tray is opened to be capable of a paper insertion,

an image formation device which forms an image on paper;

a paper transfer device to transfer paper fed from the paper feeding apparatus to the image formation device;

a paper detection device arranged in the paper transfer device to detect that paper has been fed to the paper transfer device; and

a feed control device which drives the paper feeding apparatus to feed the paper on the paper loading board to the paper transfer device when a command to select an automatic paper feed is externally input to select a paper feed from the

paper loading board, subsequently drives the paper transfer device to transfer the paper fed from the paper feeding apparatus to the image formation device when the paper detection device detects the presence of paper, and drives the paper transfer device to transfer paper to transfer paper inserted from the manual feed tray to the image formation device.

10. The image formation apparatus according to Claim 9, further comprising:

an opening/closing detection device to detect whether the manual feed tray is open to permit a paper insertion; and

a first annunciation device which forbids the process of the feed control device and announces that paper is jammed within the image formation apparatus when the command to select an automatic paper feed is input, if the opening/closing detection device detects that the manual feed tray is not open and the paper detection device detects the presence of paper.

11. The image formation apparatus according to Claim 9, further comprising:

an opening/closing detection device to detect whether the manual feed tray is open to permit a paper insertion; and

a second annunciation device to announce a requirement for a paper insertion from the manual feed tray when the

command to select a manual paper feed is externally input, and if the opening/closing detection device detects that the manual feed tray is open to permit a paper insertion, and if the paper detection device detects that paper has not been fed.

12. The image formation apparatus according to Claim 9, further comprising:

an opening/closing detection device to detect whether the manual feed tray is open to permit a paper insertion;

a command input device for feed initiation to input, by an operation of a user, a feed initiation command to initiate a paper feed from the manual feed tray; and

a third annunciation device to announce a requirement for an input of the feed initiation command when the command to select a manual paper feed is externally input, if the opening/closing detection device detects that the manual feed tray is open to permit a paper insertion, and the paper detection device detects the presence of paper, and

wherein the feed control device allows the paper transfer device to initiate a paper transfer when the feed initiation command is input from the command input device for feed initiation by an operation of a user.

13. The image formation apparatus according to Claim 9,

wherein the driving source which drives the paper

transfer device is constituted to be able to execute a predetermined preprocess other than a paper transfer prior to an image formation when driving the paper transfer device in the opposite direction to a direction of paper transfer,

further comprising a change detection device,

wherein the feed control device executes the preprocess by driving the driving source in the opposite direction when the change detection device detects that the state of the manual feed tray has changed from the closed state to the open state to permit a paper insertion.

14. A storage medium for storing control program to achieve the functions of the change detection device and the control device of the paper feeding apparatus according to Claim 4 by a computer processing.

15. A storage medium for storing control program to achieve the functions of the paper detection device, opening/closing detection device and the first annunciation device of the image formation according to Claim 10 by a computer processing.

16. A storage medium for storing control program to achieve the functions of the paper detection device, the opening/closing detection device and the second annunciation device of the image formation according to Claim 11 by a computer

processing.

17. A storage medium for storing control program to achieve the functions of the paper detection device, the opening/closing detection device, the third annunciation device and the feed control device of the image formation apparatus according to Claim 12 by a computer processing.

18. A storage medium for storing control program to achieve the functions of the change detection device, the preprocess execution device and the feed control device of the image formation according to Claim 13 by a computer processing.